Special Issue Editorial

Rendezvous Overdue: Bayes Analysis Meets Organizational Research

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Bayesian estimation and inference have been core features of scientific knowledge generation since the work of Sir Thomas Bayes was built upon by Pierre-Simone Laplace from the late 1700s through the early 1800s. Although present-day statistical analysis in organizational research is “frequentist” in nature (due to the influence of scholars such as Sir Ronald Fisher and Jerzey Neyman), the past 20 years has seen a veritable explosion of Bayesian applications across the social and physical sciences. This special issue highlights these applications and the many opportunities they carry, including precise and flexible methods for testing hypotheses and very intuitive ways of describing results.

For this special issue, three editorial commentaries were solicited from world-renowned experts in statistics, probability, and their historical and current applications. These papers offer a view from outside management, giving fresh insight into topics that are rarely covered in management research, including critical perspectives on existing paradigms in our field and recommendations for improvements in statistical methods and research design. The topics covered relate to (a) the apparent desire for universal or default methods of inquiry and inference—whether Bayesian or frequentist—which narrows researchers’ focus and reduces their ability to develop and deploy a larger “toolbox” of methods and approaches; (b) the many limitations of existing frequentist tools, which tend to be underestimated or ignored because of their institutionalized and habitual nature; and (c) the existence and importance of...
multiple theories of probability that are available for scientific inference and the benefits of acknowledging the importance of researchers’ educations and beliefs about such theories. The three expert contributors to this special section are as follows:

Gerd Gigerenzer holds a PhD in psychology from the University of Munich and is currently a Batten Fellow at the Darden Business School, University of Virginia; he is the director of the Harding Center for Risk Literacy and the Center for Adaptive Behavior and Cognition at the Max Planck Institute. Professor Gigerenzer’s extensive line of research centers on human cognition and decision making under uncertainty, and this work ties directly into his real-world applications of probability and statistics for scientific inference. Along with his former PhD student, Julian Marewski, currently an assistant professor of organization behavior at HEC Lausanne, Professor Gigerenzer describes how researchers have long sought to find a “universal” approach to scientific inference and that no such thing exists whether in frequentist or Bayesian form. Instead, a more contextualized approach to inference is recommended, sensitive to the uncertainties of a particular research endeavor.

Andrew Gelman holds a PhD in statistics from Harvard University and is currently a professor of statistics and political science and director of the Applied Statistics Center at Columbia University. Professor Gelman is a fellow of the American Statistical Association and the Institute of Mathematical Statistics and is considered one of the world’s foremost experts on Bayesian estimation and inference, having authored scores of books and journal articles on the topic ranging across statistics, psychology, sociology, economics, political science, computer science, and environmental science as well as epidemiology and the health sciences. His online blog—Statistical Modeling, Causal Inference, and Social Science—is extremely popular and features practical and conceptual issues concerning Bayesian analysis. Professor Gelman’s editorial explores the benefits of a Bayesian way of understanding and estimating parameters in statistical models to account for their inherent variability and for difficulties in replicating research results, including a series of practical recommendations for researchers interested in improving the quality of their quantitative methods.

Maria Carla Galavotti holds a PhD in philosophy from the University of Bologna, where she is a professor of philosophy of science, having previously been a visiting fellow at Cambridge, Princeton, and Stanford University, among others. Professor Galavotti is one of the world’s leading experts on the history and philosophy of probability and causality, authoring countless articles and books on the topics, not only in philosophy but also in physics, economics, decision science, and law. Professor Galavotti’s editorial describes how there are multiple theories of probability available for scientific inference, each mapping probability onto a different conceptual structure and bringing with it different critical assumptions. Given the lack of an objective model of probability and chance, along with the vast plurality in approaches to research and objects of study in management, Professor Galavotti proposes that a classic and robust subjective theory of probability will suit our field best, reflecting both observed data and the contextualized decisions researchers make in the process of conducting research.

The editorial commentaries by these eminent scholars are intentionally interspersed in the special issue as follows. First, a general introduction by the guest editors is provided in order to ground the papers that follow and serve as a user’s guide for researchers just beginning to learn about Bayesian methodology. Then, the editorial by Gigerenzer and Marewski follows in order to point out issues with any method of estimation and inference that should not be
forgotten, thereby helping to avoiding knee-jerk reactions of blind interest and universal acceptance of either Bayesian or frequentist approaches. The remaining series of papers and editorials follow in a way that mixes methodological, theoretical, empirical, and philosophical contributions. This ordering, we hope, will allow the reader to learn about and continually critically examine both the existing and alternative Bayesian approaches that are discussed.

In sum, this special issue and these three editorial commentaries will offer management researchers a gentle yet powerful introduction to Bayesian estimation and inference, while giving constructive and long-overdue critical perspectives on the traditional foundation for existing frequentist approaches. At the same time, we are not attempting to sell Bayesian analysis as a cure-all, as no single approach or method to data gathering, analysis, or interpretation will be best in every case. The goal is more modest: to increase awareness that Bayesian analysis is a useful tool in the methodological toolbox in many disciplines, and it should also be an essential tool for management research and its methods in the 21st century. Toward such a future, this special issue is merely one step on what is sure to be a long and fruitful journey for quantitative research methods as they are understood and applied in management research.